NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Remote-read meters for West Knox Rural Water System customers

SPONSOR'S *PRIMARY CONTACT INFORMATION* **(Not Consultant's)**

Sponsor Business Name: West Knox Rural Water System

Sponsor Contact's Name: Dan Ebel (Project Manager) and Bernard Jorgensen

Sponsor Contact's Address: P.O. Box 281, Verdigre, NE 68783

Sponsor Contact's Phone: 402-668-7223

Sponsor Contact's Email: wkrw@lnnrd.org

1. **Funding** amount requested from the Water Sustainability Fund:

   Grant amount requested. $ $133,706.40

   - If requesting less than 60% cost share, what %? N/A

   If a loan is requested amount requested. $ N/A

   - How many years repayment period? N/A
   - Supply a complete year-by-year repayment schedule. N/A

2. **Neb. Rev. Stat. § 2-1507 (2)**

   Are you applying for a **combined sewer overflow project**? YES☐ NO☒

   If yes:

- Do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality? YES☐ NO☐
- Attach a copy to your application.
- What is the population served by your project?
- Provide a demonstration of need.
- **Do not complete the remainder of the application.**

3. **Permits Required/Obtained** Attach a copy of each that has been obtained. For those needed, but not yet obtained (box **"NO"** checked), 1.) State when you will apply for the permit, 2.) When you anticipate receiving the permit, and 3.) Your estimated cost to obtain the permit.

(N/A = Not applicable/not asking for cost share to obtain)
(Yes = See attached)
(No = Might need, don't have & are asking for 60% cost share to obtain)

G&P - T&E consultation (required)	N/A☒ Obtained: YES☐ NO☐
DNR Surface Water Right	N/A☒ Obtained: YES☐ NO☐
USACE (e.g., 404/other Permit)	N/A☒ Obtained: YES☐ NO☐
FEMA (CLOMR)	N/A☒ Obtained: YES☐ NO☐
Local Zoning/Construction	N/A☒ Obtained: YES☐ NO☐
Cultural Resources Evaluation	N/A☒ Obtained: YES☐ NO☐
Other (provide explanation below)	N/A☒ Obtained: YES☐ NO☐

N/A

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:

a. West Knox Rural Water System Advisory Board
b. LNNRD (Lower Niobrara Natural Resources District)
c. Village of Verdigre, Village of Winnetoon
d. Verdigre Public Library

Identify the roles and responsibilities of each Partner / Co-sponsor involved in the proposed project regardless of whether each is an additional funding source.

- West Knox RWS Advisory Board: authorities are on file in the operations building in Verdigre, NE
- LNNRD: manages the groundwater resources within its district under the authority granted by Nebraska's Groundwater Management and Protection Act. LNNRD is not a funding source and is not involved with this grant application.
- Villages: Not funding sources for this project. Besides providing their drinking water, West Knox RWS has been doing all of Verdigre's water operator duties for nearly two years while they continue to delay hiring their own full-time maintenance supervisor/water operator.
- Verdigre Public Library: Grant research, writing, coordination by librarian Katie Hollmann verdigrelibrary@gmail.com 402-668-2677

5. Other Sources of Funding

Identify the costs of the entire project, what costs each other source of funding will be applied to, and whether each of these other sources of funding is confirmed. If not, please identify those entities and list the date when confirmation is expected. Explain how you will implement the project if these sources are not obtained.

To cover its share of 40% of the water meters project West Knox RWS will take out a loan from the NE State Revolving Fund. The only source of revenue for West Knox RWS is the sale of water to its customers.

6. Overview

In 1,000 words *or less*, provide a brief description of your project including the nature/purpose of the project and its objectives. Do not exceed one page!

West Knox Rural Water System delivers reliable, safe drinking water at an efficient price to over 1,400 rural people and innumerable livestock. Covering 528 square miles, West Knox RWS delivers water to numerous farms, pastures and farmsteads as well as to the Villages of Verdigre and Winnetoon and Alpine Village nursing home located in Verdigre. The water infrastructure covered by West Knox RWS is in dire need of rehabilitation and modernization. West Knox RWS began operation in 1985. It has four primary wells dating from 1984-2015 that pump from the Ogallala Formation of the High Plains Aquifer into a 210,000 gallon water tower. There are two booster pumps and two additional storage tanks. The system delivers from

65,000,000 to 82,000,000 million gallons of quality drinking water each year. (See table of annual usage from past ten years in Section B 1.A.4.) West Knox RWS falls under the auspices of the Lower Niobrara Natural Resources District, has a seven member volunteer advisory board and is comprised of three staff—two system operators and a bookkeeper. In addition to the duties of their district, the two water operators have been serving as Verdigre's water operators for the almost two years that the village has not hired their own. This project is to replace 302 antiquated meters (estimated to be 20-39 year old equipment) with remote-read meters. Twelve of the 302 will be master meters. New meters will either send water usage statistics directly to the West Knox RWS office (preferred option) or the meters can be read on a cell phone by driving within 1.5 miles (the less-preferred option). Upgrades, such as new posts, lids and signage, are included in the funding request as is contracted installation. The meters in use now are located across a large district of 22 miles north-to south and 24 miles east-to-west in western Knox County, Nebraska . There are three master meters, including at the point of sale for the villages of Verdigre and Winnetoon. Meters are old, need frequent repairs, give inaccurate readings, and--due to obsolescence—have unavailable replacement parts. Not only are the meters often malfunctioning, many are hard to access so that rural customers who self-report guess at their water usage, or avoid the hassle of reading meters and instead pay an estimate-based monthly fee. West Knox RWS has discussed needing new meters for years, but the project is unattainable except with grant funding. New meters will improve the efficiency of monitoring real-time actual water usage, guarantee more accurate transactions and, importantly, save time, labor and expense (i.e. reduce the workload) of the two system operators responsible for the district. Technology has improved so that more kinds of helpful data will be provided by new meters. Not only West Knox RWS, but customers, also, will be able to access and analyze their real-time water usage. This may help encourage a more thoughtful and efficient use of groundwater. Additionally, new meters will help West Knox RWS detect leaks quickly thus helping sustain Nebraska's precious water resources. In the big picture, when less time is spent on band-aid repairs to old meters, West Knox RWS can give more attention to their further goals of wellhead protection that include mitigating against nitrate pollution and natural disasters. Additionally West Knox RWS is willing to do its part to improve drought resiliency and address climate-related impacts on the water supply of Nebraska. West Knox RWS has its own Wellhead Protection Plan (2020). It falls within both the Bazile Groundwater Management Area and the Lower Niobrara NRD Groundwater Management Plan. It also has Emergency, Contingency and Long-Term planning in place.

7. Project Tasks and Timeline

Identify what activities will be conducted to complete the project, and the anticipated completion date.
For multiyear projects please list (using the following example):

Tasks	Year 1$	Year 2$	Year 3$	Remaining	Total $ Amt.
Permits	$18,000				$18,000
Engineering		$96,000			$96,000
Construction		$87,000	$96,000		$183,000

Close-out	$8,000	$8,000
	TOTAL	$305,000

- What activities (Tasks) are to be completed.
- An estimate of each Tasks expenditures/cost per year.
- Activities in years 4 through project completion under a single column.

Project Tasks and Timeline

TASKS	YEAR 1	YEAR 2
Purchasing of equipment: meters, lids, posts, signs	$186,044.00	Only if there are delivery delays
Contracted installation	$36,800.00	TBD if can be done in one summer or two
TOTAL	$222,844.00	

The project tasks would be for the project manager to purchase the remote-read water meters along with lids, posts and metal signage, and perform the installations along with any necessary upgrades needed at the sites. Because West Knox RWS has only two system operators, contracted installation is part of this funding request. If grant funding is secured the hope is all meters could be installed in the summer/fall of 2024 or possibly carried over to summer of 2025.

8. **IMP**

Do you have an **Integrated Management Plan** in place, or have you initiated one? YES☒ NO☐ Sponsor is not an NRD☐

Yes- West Knox RWS follows the guidelines set in both the Bazile Groundwater Management Area (south) and the Lower Niobrara NRD Groundwater Management Plan (north)

Section B.

DNR DIRECTOR'S FINDINGS

Prove Engineering & Technical Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 004)

1. Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?
YES☒ NO☐

If you answered "YES" you must answer all questions in section 1.A.
If you answer "NO" you must answer all questions in section 1.B.

If "YES", it is considered mostly structural, so answer the following:

1.A.1 Insert a feasibility report to comply with Title 261, Chapter 2, including engineering and technical data; Since the project is merely to replace antiquated water meters with new remote-read meters we do not have an engineering and technical feasibility report. There is nothing experimental or conjectural about this project. Every rural and municipal customer of West Knox Rural Water System currently has a water meter, albeit not all are functioning or in a location convenient to access. Current meters are all estimated to be 20-39 years old, dating from when West Knox RWS was founded. The potential economic feasibility we would want to highlight (if we had expertise with data) relates to water loss. Our operators are concerned about how long it takes to detect water leaks with these old meters. Leaks are a financial detriment to customers and waste Nebraska's precious water resource. Since this project is just for replacing current equipment there is no engineered data required for the task. Here is an excerpt from West Knox Rural Water System's Wellhead Protection Plan by Olson Engineering where it states that this exact project is desired: 7.6. "Potential Management Activities-- Future protection activities by the West Knox RWS include additional education opportunities, continued implementation of BMPs, and additional well abandonments or well modifications, as needed. Additionally, there may be system improvements such as remote water meter readers and other measures implemented to reduce the workload on system operations staff." (page 38)

1.A.2 Describe the plan of development (004.01 A); The West Knox RWS project manager, Dan Ebel, has equipment bid proposals for 302 meters from two different suppliers. One

bid is for drive-by readers; the other is for the kind that sends data to the office. The latter is preferable and a lower bid. In addition, due to West Knox RWS being comprised of just two system operators for a 528 square mile district (i.e. a large workload), this project is for contracted installation. Dan has one bid from the only local well/plumbing outfit who consented to consider this project, which means the project timeline could be less than one year, specifically summer/fall 2024. Thirdly, there will be upgrades needed at many meter sites (all are estimated to be 20-39 years old) so Dan has included posts and other supplies in the project budget.The plan of development is to secure funding (this grant, potentially, then take out a loan from the NE State Revolving Fund and, if necessary, designate a portion of water sale revenue for the local 40%), purchase equipment, have it installed, educate customers and staff on new opportunities related to the tech of modern meters, submit final reports related to project funding.

1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B); Field investigations: For this we would cite all the many on-site repair efforts made by the two system operators for West Knox Rural Water System. As current water meters serving over 1,400 people and innumerable livestock are all estimated to be 20-39 years old, the operators have made endless trips, expended much manual labor and incurred expense to get meters working again. There are five different kinds of meters in use, therefore no interchangeability of parts. Frustratingly, due to obsolescence, parts have become unavailable.

1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);

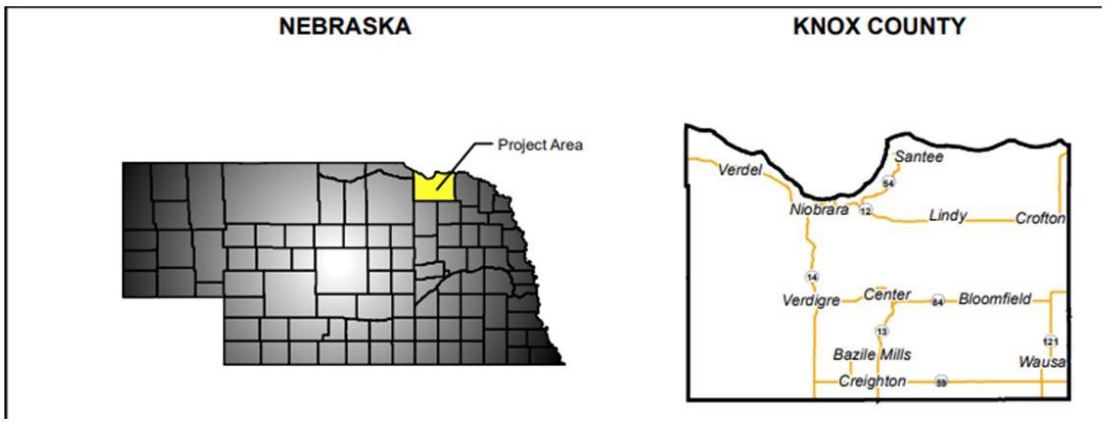


Figure 5.1 Water operations check in the operations facility for the West Knox RWS.

, NE.

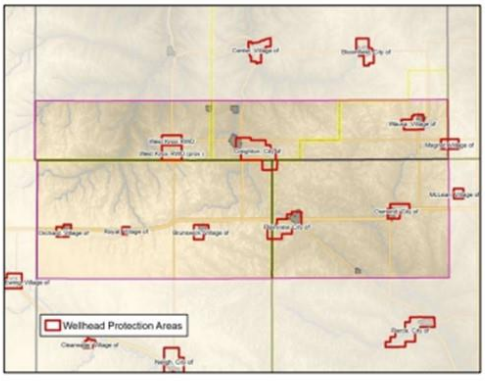
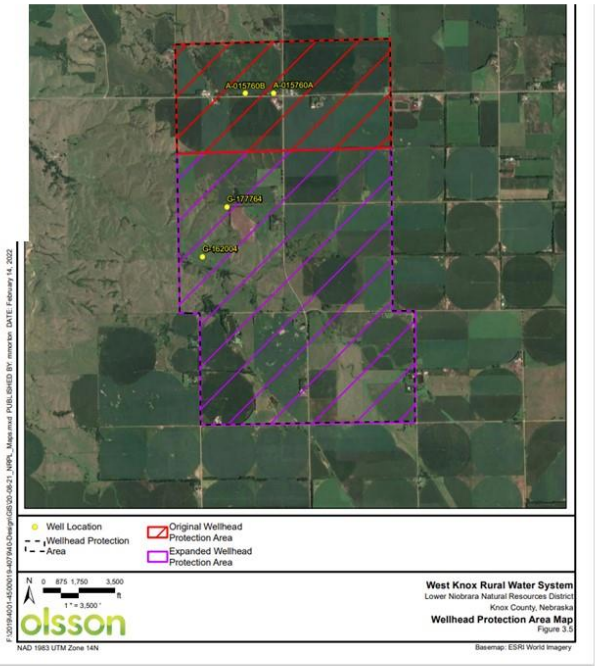
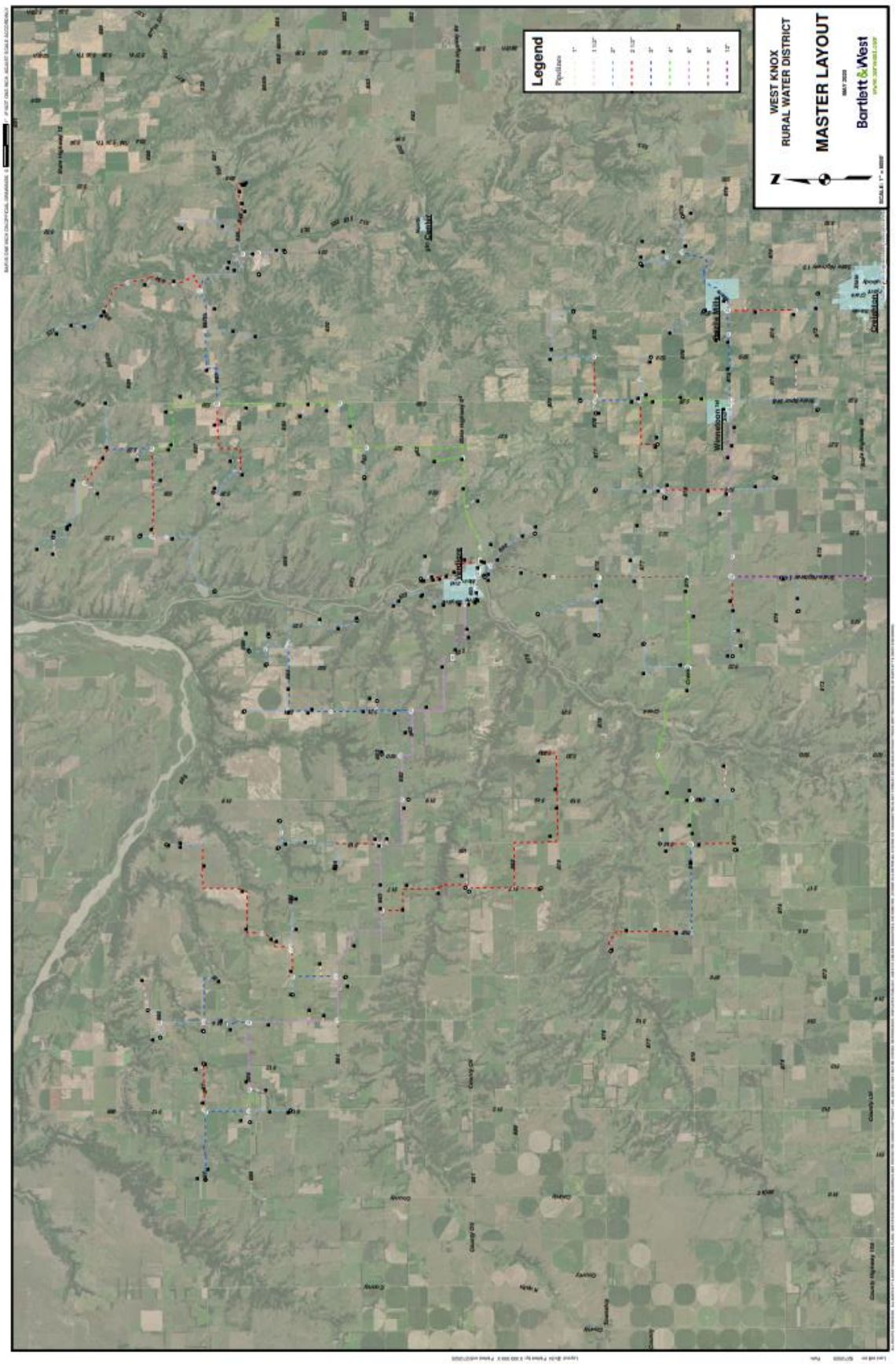
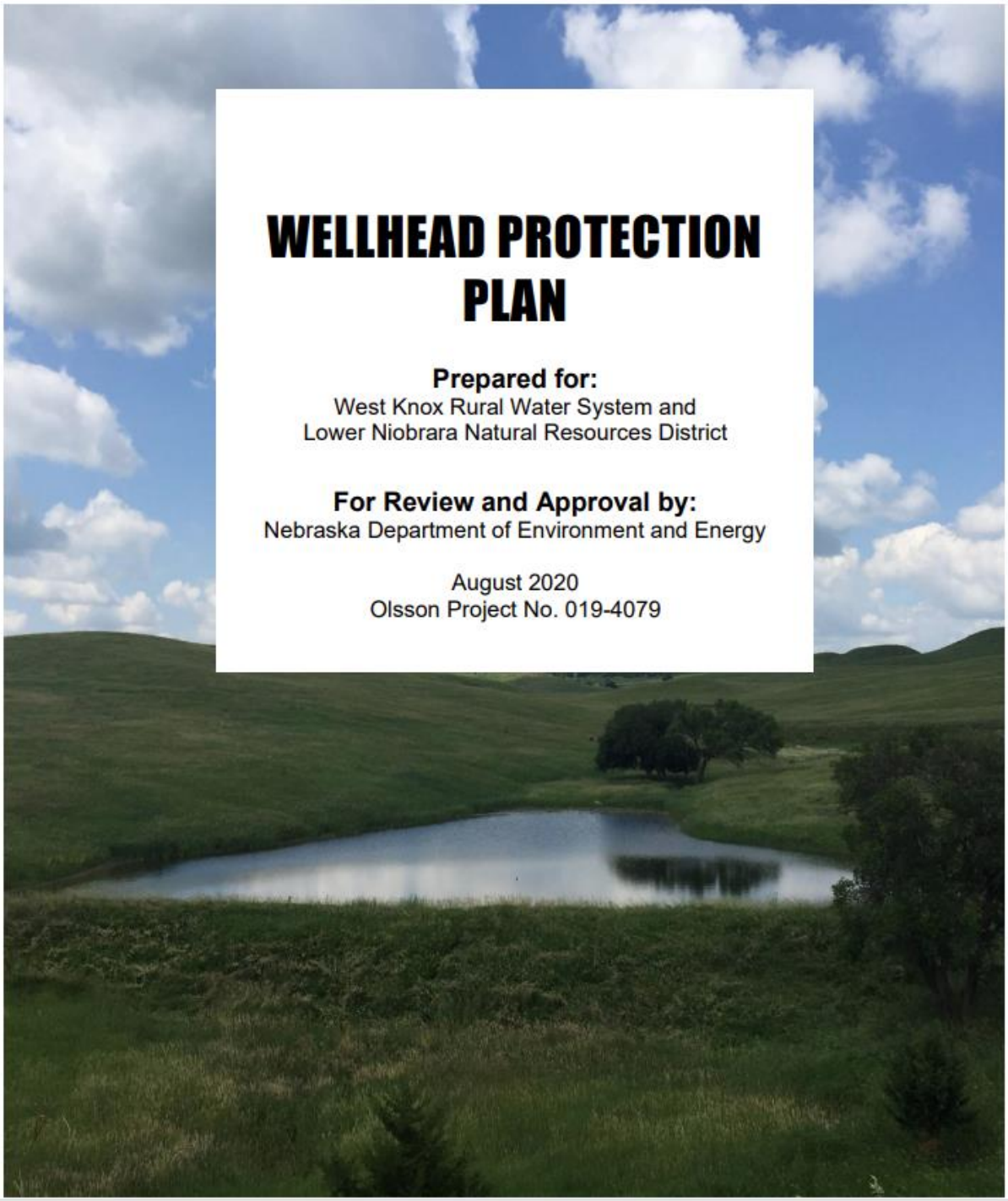


Figure 1.5 Wellhead Protection Areas within the BGMA from NDEQ 2016.




Legend
WEST KNOX
RURAL WATER DISTRICT
MASTER LAYOUT
Bartlett & West


WELLHEAD PROTECTION PLAN
Prepared for:
West Knox Rural Water System and
Lower Niobrara Natural Resources District
For Review and Approval by:
Nebraska Department of Environment and Energy
August 2020
Olsson Project No. 019-4079

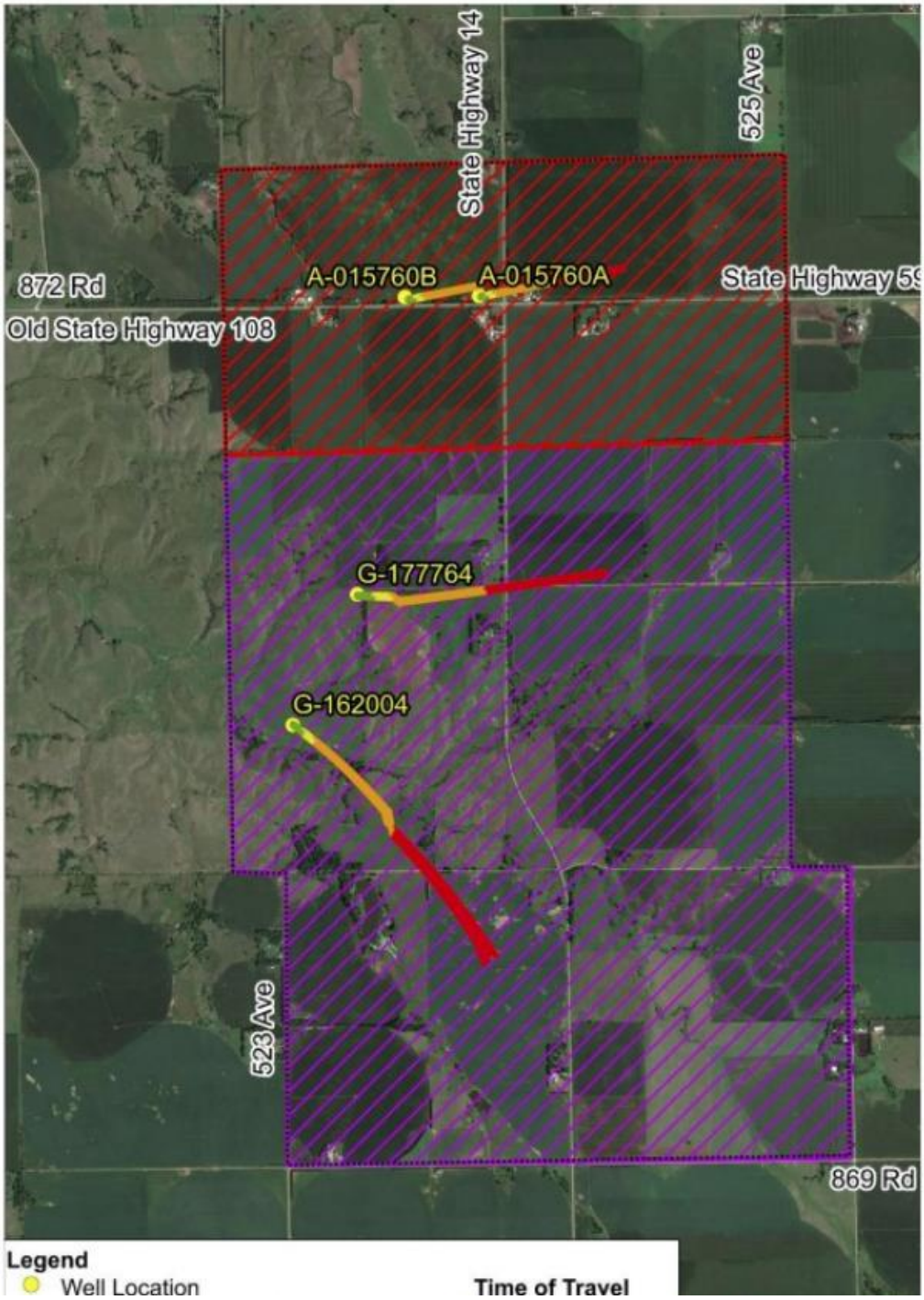
WEST KNOX RURAL WATER SYSTEM USAGE STATISTICS

Annual Usage

Year	Gallons
2023	81,161,000
2022	82,964,000
2021	75,660,000
2020	70,282,000
2019	68,569,000
2018	65,550,000
2017	66,607,000
2016	69,750,000
2015	67,084,000
2014	74,640,000
2013	68,498,000

Monthly Usage in 2023

January	5,144,000
February	5,263,000
March	4,749,000
April	5,921,000
May	7,689,000
June	9,326,000
July	8,652,000
August	9,221,000
September	7,660,000
October	6,290,000
November	5,671,000
December	5,575,000


State Highway 14
525 Ave
872 Rd
Old State Highway 108
A-015760B
A-015760A
State Highway 59
G-177764
G-162004
523 Ave
869 Rd
Legend
Well Location
Time of Travel

WEST KNOX RURAL WATER SYSTEM: WATER METER PROJECT BIDS

	$/unit	Quantity	Cost
Equipment			
3/4" M25 bronze bare meter	$ 75.00	270	$ 20,250.00
M25 gallon 8 Dial HRE	$ 102.00	270	$ 27,540.00
1" M70 low lead bare meter	$ 237.00	20	$ 4,740.00
M70 gallon 8 Dial HRE	$ 105.00	20	$ 2,100.00
1 1/2" E-series meter	$ 739.00	4	$ 2,956.00
2" E-series meter	$ 992.00	2	$ 1,984.00
3" E-series meter	$ 2,674.00	2	$ 5,348.00
4" E-series meter	$ 3,259.00	3	$ 9,777.00
6" E-series meter	$ 4,923.00	1	$ 4,923.00
Orion cellular endpoint (antennas)	$ 170.00	302	$ 43,690.00
IR Communication for cellular endpt	$ 134.00	1	$ 134.00
Software/Licensing Agreements			
Remote Capabilities			
BEACON engagement fee	$1.02 each/month		$ 6,500.00
Onsite training-Getting started w/ Beacon	$ -		
Beacon billing integration fee	$ 4,778.00		$ 4,778.00
Total with 5.5% tax			$ 142,370.00
Lids for meter pits	$ 101.67	300	$ 30,500.00
Total with 5.5% tax			$ 32,177.00
Posts from B's Enterprises Inc.-7' 12# U-chai	$ 15.00	300	$ 4,500.00
Total with 5.5% tax			$ 4,747.00
Metal 8"x11" signs from Love Signs	$ 22.50	300	$ 6,750.00

Contract Installation (Pease Plumbing)			
Plumbing/replace 6" meter in well house	$ 800.00	1	$ 800.00
Ditto 4" meters in two wells and booster	$ 600.00	3	$ 1,800.00
Ditto 2" meters in well and booster	$ 400.00	2	$ 800.00
Ditto 3" meters in care center and booster	$ 500.00	2	$ 1,000.00
Ditto 1.5" meters in V pit, Winnetoon, V pool,	$ 350.00	4	$ 1,400.00
Ditto 1" meters	$ 200.00	20	$ 4,000.00
Ditto 3/4" meters	$ 100.00	270	$ 27,000.00
			$ 36,800.00

PROJECT TOTAL	$ 222,844.00
60% Grant Request	**$ 133,706.40**
40% Local Match	$ 89,137.60

Table 2.1 West Knox RWS Well Identification and Status

West Knox RWS Well ID	DNR Well Number	Status
Well 84-1, Well #1	A-15760-B	Active
Well 84-2, Well #2	A-15760-A	Active
Well 2015-1, Well #3	G-177764	Active
Well 2015-2, Well #4	G-162004	Active

Table 2.2 West Knox RWS Well Construction Information

DNR Well Number	Install Date	Total Depth	Pumping Rate	Depth to Water	Screen Top	Screen Bottom	Aquifer Designation
		feet bgs	gpm	feet bgs	feet bgs	feet bgs	
A-15760-B	1984	200	200	84	170	197	High Plains Aquifer
A-15760-A	1984	213	200	89	133	210*	High Plains Aquifer
G-177764	2015	125	300	10	97	125	High Plains Aquifer
G-162004	2011	203	200	74	165	198*	High Plains Aquifer

Notes: gpm = gallons per minute, feet bgs = feet below ground surface.
* The screen interval is not continuous and well registration records should be reviewed for additional detail on each screened interval within this range.

Table 2.3 West Knox Rural Water System Statistics

West Knox Rural Water System Statistics	
West Knox RWS Service Connections	Rural Water System = 250
	Village of Verdigre = 575
	Village of Winnetoon = 65
Estimated Population Served	1,390
Total water pumped in 2019	68,569,000 gallons
Average daily production of water (2019 data)	187,860 gallons
Peak monthly production of water (2019 data)	8,409,000 gallons
Storage Capacity	621,000 gallons

master layout of district, table of annual water usage, from Wellhead Protection Plan—p. 2 (location in NE), p. 5 (wellhead protection areas within BGMA from NDEQ 2016), p.

8 (statistics from august 2020), p. 15 (expanded wellhead protection area), p. 22 pix of guys, TABLE OF DAN's BIDS

1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D); N/A

1.A.6 Discuss each component of the final plan (004.01 E); In the attached table (in section 1.A.4.) with all the bid elements that West Knox RWS received from Metering and Technology Solutions (Burnsville, MN), there are a total of 302 water meters ranging in size from ¾" to 6". The bid also includes antennas, heads for the M25 and M70 gallon meters, and (if we understand correctly) software and licensing agreements for the remote capabilities. Other necessary equipment, specifically lids for the meter pits, posts and metal signs, are bid from local vendors. The contracted installation bid is from the only local plumber who consented to consider the project. West Knox RWS operators think this represents all the equipment and services they need for this project.

1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1); N/A

1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2); N/A

1.A.9 When applicable include the criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3). N/A

If "NO", it is considered mostly non-structural, so answer the following:

1.B.1 Insert data necessary to establish technical feasibility (004.02); N/A

1.B.2 Discuss the plan of development (004.02 A); N/A

1.B.3 Describe field or research investigations utilized to substantiate the project conception (004.02 B); N/A

1.B.4 Describe any necessary water and/or land rights (004.02 C); N/A

1.B.5 Discuss the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D). N/A

Prove Economic Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 005)

2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.

West Knox Rural Water System's only source of revenue is the sale of water. Any big projects undertaken must be paid from other sources, such as this grant. At this time West Knox RWS knows of no alternatives to funding the purchase and installation of remote-read water meters. A 3/4/24 Treasurer's report said the operating account had $118,033.79. Cash reserves for capital improvements are $80,269.30. The average monthly revenue is $32,042. These revenues, plus a loan from the NE State Revolving Fund, are the plan for paying the local 40% (if this grant is awarded). The next best alternative, therefore, would be to wait as long as it takes to learn about and apply for other funding sources.

As to doing the project economically, the project manager has done due diligence procuring bids for equipment, contracted installation and other supplies needed for post or meter-location upgrades.

3. Document all sources and report all **costs** and **benefit data** using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies is the project life. (Title 261, CH 2 - 005). The capital construction costs information in dollar value is detailed in answer 1.A.6 above. No budgetary changes in annual operation costs are expected. New models of water meters are expected to run more efficiently than the antiquated ones and will have a life expectancy of twenty years. Once new meters are purchased and installed, maintenance and/or replacements will be infrequent. Any necessary repairs or occasional replacements would be covered by the general budget of West Knox Rural Water System. The construction period is intended to be the summer/fall of 2024. If contracted installation takes longer, it would extend to summer 2025. As mentioned, new meters are supposed to function well for twenty years.We do not have the technical expertise on the grant team (i.e. one librarian, two water system operators and one bookkeeper) to provide an economic feasibility study, let alone costs and benefit data. We apologize for giving basic answers.

3.A Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01). Please see answer #3.

3.B Only primary tangible benefits may be counted in providing the monetary benefit information and shall be displayed by year for the project life. In a multi-purpose

project, estimate benefits for each purpose, by year, for the life of the project. Describe intangible or secondary benefits (if any) separately. In a case where there is no generally accepted method for calculation of primary tangible benefits describe how the project will increase water sustainability, in a way that justifies economic feasibility of the project such that the finding can be approved by the Director and the Commission (005.02). There are many tangible and intangible benefits of replacing antiquated water meters with remote-reads. The meters in use now are 20 to 39 years old. They are located at houses, farmsteads and pastures across the large district of 22 miles north-to south and 24 miles east-to-west of West Knox Rural Water System . There are three master meters, including at the point of sale for the villages of Verdigre and Winnetoon. Meters are decaying, need frequent repairs, give inaccurate readings, and--due to obsolescence—have unavailable replacement parts. There are five different brands in use, so there is no interchangability of parts. Not only are the meters often malfunctioning, many are hard to access so that rural customers who self-report guess at their water usage, or avoid the hassle of reading meters and just pay an estimate-based monthly fee. New meters will improve the efficiency of monitoring real-time actual water usage, guarantee more accurate transactions and, importantly, save time, labor and expense (i.e. reduce the workload) of the two system operators responsible for the district. Also, because technology has improved more kinds of helpful data will be provided by new meters. Not only West Knox RWS, but customers, also, will be able to access and analyze their real-time water usage. This may help encourage a more thoughtful and efficient use of groundwater. Very importantly, new meters will help West Knox RWS detect leaks quickly thus helping sustain Nebraska's precious water resources. We do not know how to provide calculations that show these tangible and intangible benefits.

3.C Present all cost and benefit data in a table to indicate the annual cash flow for the life of the project (005.03). Please see answer #3.

3.D In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, demonstrate the economic feasibility of such proposal by such method as the Director and the Commission deem appropriate (005.04). (For example, show costs of and describe the next best alternative.) Please see answer #3.B

Prove Financial Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 006)

4. Provide evidence that sufficient funds are available to complete the proposal. The March 2024 cash balance of West Knox RWS was $118,033.79 and the Capital Improvements Cash Reserve was $80,269.30. Their only revenue source is sale of water which averages $32,042 monthly.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace). The average annual revenue of West Knox RWS is $384,504 which is predicted to be sufficient to pay on a loan from the NE State Revolving Fund and to operate/maintain the water meters once they are installed.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal. N/A

7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.). The remote-read water meters in this project are non-intrusive and will have no expected impact on the natural environment. By detecting water leaks early this project will have a positive impact on the environment.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds. Qualifications: The West Knox Rural Water System operators have extensive experience with water meters from providing safe, reliable drinking water to over 1,400 consumers and innumerable livestock since 1989. The proposed project is a progressive development of water measurement that the staff is fully capable of operating.Responsibilities: The project corresponds with the Lower Niobrara Natural Resource District's rules and regulations requiring metering of all water use in the district. As part of the LNNRD, West Knox RWS follows the integrated management plan of the LNNRD. Metering is a management activity and West Knox RWS is compliant on filing water usage reports monthly and annually. Legal Authority: Nebraska Revised Statute 46-707 provides Natural Resources Districts including the LNNRD, which includes West Knox RWS, authority to place meters to track water usage. The installation of remote-read water meters is consistent with this authority.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state. West Knox Rural Water System is located in both the Bazile Groundwater Management Area and Lower Niobrara Groundwater Management Area and fully participates in encouraging best management practices by its customers that are protective of Nebraska's groundwater resources.The Lower Niobrara Natural Resources District Groundwater Management Plan has existed since 1986 and since then has been monitoring both the quantity and quality of water across the district. Its Integrated Management Plan was adopted in 2014, with revisions made as recently as 2019.As of 2020 it is our understanding that the NE Department of Environment and Energy (NDEE) is working with four NRDs to devise a regional-based Integrated Management Plan for the entire Bazile Groundwater Management Area. In the meantime, formulated in 2020 and approved by the NDEE in 2023, West Knox RWS follows its own Wellhead Protection Plan, prepared by Olson Engineering. System improvements such as installing remote

water meter readers to reduce the workload on system operations staff is one of the goals stated in the Plan.

10. Are land rights necessary to complete your project? YES☐ NO☒

If yes:

10.A Provide a complete listing of all lands involved in the project. N/A

10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held. N/A

10.C Provide assurance that you can hold or can acquire title to all lands not currently held. N/A

11. Identify how you possess all necessary authority to undertake or participate in the project. 11. Nebraska Revised Statute 46-707 provides Natural Resources Districts, including the Lower Niobrara NRD, authority to place meters to track water usage. West Knox RWS is under the auspices of the LNNRD.

12. Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed. 12. Replacing old water meters with modern meters should not have negative environmental or ecological consequences. Positive consequences are expected from accurate monitoring of water usage. System operators want early detection of water leaks to mitigate water waste. Plus the real-time usage data available from new technology can encourage customers to become more thoughtful, efficient users of Nebraska's precious water resources.

Section C.

NRC SCORING

In the NRC's scoring process, points will be given to each project in ranking the projects, with the total number of points determining the final project ranking list.

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0, 2, 4, or 6 for items 1 through 8; and 0, 1, 2, or 3 for items 9 through 15. Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

- The responses to one criterion *will not* be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.

- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted above. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.

- The Commission recommends providing the requested information and the requests are not intended to limit the information an applicant may provide. An applicant should include additional information that is believed will assist the Commission in understanding a proposal so that it can be awarded the points to which it is entitled.

Complete any of the following (15) criteria which apply to your project. Your response will be reviewed and scored by the NRC. Place an N/A (not applicable) in any that do not apply, an N/A will automatically be placed in any response fields left blank.

1. Remediates or mitigates threats to drinking water;

    - Describe the specific threats to drinking water the project will address.
    - Identify whose drinking water, how many people are affected, how will project remediate or mitigate.
    - Provide a history of issues and tried solutions.
    - Provide detail regarding long-range impacts if issues are not resolved.

The whole purpose of West Knox RWS is to provide safe, reliable drinking water to over 1,400 people and innumerable livestock. Stewarding its water infrastructure is key to that mission. Though water meters themselves do not pose or solve a threat to drinking water,

having water meters that work properly helps the big picture of water sustainability. For example, consistent, accurate revenues from water sales ensure a stable provision of water services and efficient cost by West Knox RWS. Spending less time on repairing antiquated meters allows the sole two system operators time to work on larger issues such as nitrate pollution near their wellheads and encouraging compliance by rural customers on setback distances (from water supply wells) for their lagoons, feedlot runoff, septic systems, corrals, dumps and chemical storage. Historically speaking, the West Knox RWS has never had funding to replace all water meters at once. Instead there has been a band-aid approach to fix each break-down as it was detected. This has been requiring a lot of time, expense and manual labor. The operators fix what they can and replace meters as needed. All current water meters are 20-39 years old and of five different brands. Parts are getting more and more unavailable.

2. Meets the goals and objectives of an approved integrated management plan or ground water management plan;

   - Identify the specific plan that is being referenced including date, who issued it and whether it is an IMP or GW management plan.
   - Provide the history of work completed to achieve the goals of this plan.
   - List which goals and objectives of the management plan the project provides benefits for and how the project provides those benefits.

West Knox Rural Water System is located in both the Bazile and Lower Niobrara Groundwater Management Areas and fully participates in encouraging best management practices by its customers that are protective of Nebraska's groundwater resources.

The Lower Niobrara Natural Resources District Groundwater Management Plan has existed since 1986 and since then has been monitoring both the quantity and quality of water across the district. Its Integrated Management Plan was adopted in 2014, with revisions made as recently as 2019.

As of 2020 it is our understanding that the NE Department of Environment and Energy (NDEE) is working with four NRDs to devise a regional-based Integrated Management Plan for the entire Bazile Groundwater Management Area.

In the meantime, formulated in 2020 and approved by the NDEE in 2023, West Knox RWS follows its own Wellhead Protection Plan, prepared by Olson Engineering.

Activities related to the goals of the *Wellhead Protection Plan* already completed by West Knox RWS as of 2020 are as follows:

- Installation of two additional wells to double the pumping capacity of the system
- Expanded boundary of wellhead protection area to encompass the two new wells

- Installation of SCADA systems on all wells to simplify system operations and blend the water from all four wells to optimize water quality
- Sealed a tube adjacent to Well #2 that may have been contributing to higher nitrate levels than in Well #1

Planned activities by West Knox RWS for the *Wellhead Protection Plan's* goals are:

- Educational opportunities for the community
- Continued encouragement of Best Management Practices by agricultural producers to meet nitrate reduction goals
- Additional well abandonments or modifications, as needed.
- System improvements such as remote water meter readers to reduce the workload on system operations staff [i.e. THIS PROJECT]

3. Contributes to water sustainability goals by increasing aquifer recharge, reducing aquifer depletion, or increasing streamflow;

   List the following information that is applicable:

   - The location, area and amount of recharge;
   - The location, area and amount that aquifer depletion will be reduced;
   - The reach, amount and timing of increased streamflow. Describe how the project will meet these objectives and what the source of the water is;
   - Provide a detailed listing of cross basin benefits, if any.

   West Knox Rural Water System covers 528 square miles, serves a rural population of over 1,400, has four primary wells, booster pumps and various storage tanks. Since equipment maintained by West Knox RWS includes over 250 old water meters--aged 20-39 years-- breaking down on a regular basis, staff has been very concerned about delayed detection of water leaks. They would truly like to reduce aquifer depletion by stopping water leaks as soon as possible. New remote-read water meters will help achieve that goal.

4. Contributes to multiple water supply goals, including, but not limited to, flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources;

   - List the goals the project provides benefits.
   - Describe how the project will provide these benefits
   - Provide a long range forecast of the expected benefits this project could have versus continuing on current path.

The goal of West Knox Rural Water System is to provide safe, reliable water at an efficient price to over 1,400 rural customers and their livestock in both agricultural and municipal settings. This water supply goal is hugely helped by this project of updating 302 meters. New meters will be located at pastures, feedlots, gardens and homes. Besides the agricultural uses, West Knox RWS provides all the drinking water to the villages of Verdigre and Winnetoon, not to mention the Alpine Village nursing facility where a tremendous amount of water is used daily in the loving care of the elders of the region. Detecting water leaks has been a headache with the old and decaying water infrastructure. New meters will help with early detection of leaks, thus conserving Nebraska's precious water supply. Additionally, by spending less time on repairs of outdated equipment, the West Knox RWS operators can give more energy to encouraging best management practices to address local nitrate problems.

5. Maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents;

- Describe how the project will maximize the increased beneficial use of Nebraska's water resources.
- Describe the beneficial uses that will be reduced, if any.
- Describe how the project provides a beneficial impact to the state's residents.

West Knox Rural Water System has four primary wells pumping from the Ogallala Formation of the High Plains Aquifer. The district covers 528 square miles and provides safe, reliable drinking water to over 1,400 rural Nebraskans plus innumerable livestock. There are four primary wells, booster pumps, various storage tanks and miles and miles of pipe. Since equipment maintained by WKRWS includes over 250 antiquated water meters breaking down on a regular basis, staff has been very concerned about delayed detection of water leaks. They would truly like to reduce Nebraska's aquifer depletion by stopping water leaks as soon as possible. New remote-read water meters will help achieve that goal and preserve Nebraska's precious water resources.

6. Is cost-effective;

- List the estimated construction costs, O/M costs, land and water acquisition costs, alternative options, value of benefits gained.
- Compare these costs to other methods of achieving the same benefits.
- List the costs of the project.
- Describe how it is a cost effective project or alternative.

This project is cost-effective. The only alternative to water metering is for rural customers to self-report their water usage based on estimates. In fact, this is the status quo for many of West Knox Rural Water Systems customers. Since water fees are the only revenue for West Knox RWS, it is imperative for usage data and billing to be accurate, fair and consistent year-round. Remote-read meters will be an improvement.

Current meters range in age from 20-39 years old, malfunction often, and have less and less parts availability. Much of the workload of West Knox RWS system operators is doing band-aid repairs across 528 square miles. Another headache is that having five different brands of water meters in use has been preventing inter-changeability of repair parts. New water meters are supposed to have a twenty-year lifespan and will provide a variety of real-time data to cell phones. Faster leak detection is a high priority which definitely adds to cost-effectiveness by preventing water waste.

7. Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;

- Identify the interstate compact, decree, state contract or agreement or federal law.
- Describe how the project will help the state meet its obligations under compacts, decrees, state contracts or agreements or federal law.
- Describe current deficiencies and document how the project will reduce deficiencies.

As the Wellhead Protection Plan of West Knox Rural Water System states, "The mission of Nebraska's Public Water System (PWS) Program is to protect the health and welfare of Nebraskans by assuring that their water will be safe to drink when they turn on their faucet." Not only does the West Knox RWS serve over 1,400 customers, it helps the state's mission by monitoring for the presence of 83 contaminants. It has been monitoring water quality ever since 1984 and therefore helps Nebraska meet its obligations under the Safe Drinking Water Act. Since West Knox RWS supplies water to the villages of Verdigre and Winnetoon, it follows local management strategies as required by Nebraska State Statue 17-536 related to protecting municipal water supplies.

8. Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the United States such that their incapacitation would have a debilitating effect on public security or public health and safety;

- Identify the property that the project is intended to reduce threats to.
- Describe and quantify reductions in threats to critical infrastructure provided by the project and how the infrastructure is vital to Nebraska or the United States.
- Identify the potential value of cost savings resulting from completion of the project.
- Describe the benefits for public security, public health and safety.

Even though this project is strictly to purchase water meters, it is imperative to the goal of West Knox Rural Water Systems to provide safe, reliable drinking water to 1,400 customers and innumerable livestock. The physical assets of West Knox RWS include

critical water infrastructure: four primary wells pumping from the Ogallala Formation of the High Plains Aquifer, a 210,000 gallon water tower, two booster pumps, two additional storage tanks, miles and miles of pipe, 280+ meters and three master meters. The system delivers from 65,000,000 to 82,000,000 million gallons of quality drinking water each year. In compliance with the Nebraska Department of Health and Human Services' Public Water Supply Program, the West Knox RWS is vigilant about testing for the 83 contaminants that could pose a threat to public health. Also, when less time by West Knox RWS water operators is spent on getting obsolete water meters to work, more time can be spent on maintaining and upgrading the water infrastructure of the district. This in turn protects public security and public health. Our part of Knox County suffered devastating flooding on March 13, 2019. The water line serving Verdigre and customers west of town was severed by flood debris in the Verdigre Creek. West Knox RWS, aided by the Village and a local well company, performed herculean feats in unprecedented muddy conditions during a blizzard on March 14 to get an emergency water line spliced in six places and across the creek and to the nursing home, village and customers out west. The whole area experienced life without water, boiling water for weeks on end, and just how precarious public health is when our water supply is threatened. Beyond emergency measures West Knox RWS was tireless in making permanent repairs to the area's water infrastructure. It cannot be emphasized enough that any aid given to West Knox RWS in their day-to-day operations—in this case, properly working water meters for the whole district—shores up their ability to steward our local water infrastructure which in turn promotes public health and security.

9. Improves water quality;

- Describe what quality issue(s) is/are to be improved.
- Describe and quantify how the project improves water quality, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- Describe other possible solutions to remedy this issue.
- Describe the history of the water quality issue including previous attempts to remedy the problem and the results obtained.

Water meters, themselves, do not improve water quality. However new meters across the district would reduce the workload (time, expense and manual labor) spent on endless repairs to old equipment by the two system operators of West Knox Rural Water System. This will free up their resources to pursue the goals of their Wellhead Protection Plan which include reducing nitrate pollution—a definite factor in water quality. So, yes, this project will be a step on the way to improving water quality.

10. Has utilized all available funding resources of the local jurisdiction to support the program, project, or activity;

- Identify the local jurisdiction that supports the project.

- List current property tax levy, valuations, or other sources of revenue for the sponsoring entity.
- List other funding sources for the project.

The West Knox Rural Water System has absolutely no source of revenue other than the sale of water to customers. It gets no tax dollars whatsoever, nor does it get financial assistance from the Lower Niobrara Natural Resources District. In order to pay for its 40% share of this project (water meters) the West Knox RWS will take out a loan from the Nebraska State Revolving Fund and use revenue from the sale of water.

11. Has a local jurisdiction with plans in place that support sustainable water use;

- List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.
- Provide the history of work completed to achieve the goals of these plans.
- List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.
- Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- List all stakeholders involved in project.
- Identify who benefits from this project.

West Knox Rural Water System, a district that covers 528 square miles and serves over 1,400 customers, is comprised of three staff members (two system operators and a bookkeeper) and has a volunteer advisory board with seven members. It is under the auspices of the Lower Niobrara Natural Resources District. West Knox RWS is located in both the Bazile and Lower Niobrara Groundwater Management Areas and fully participates in encouraging best management practices by its customers that are supportive of sustainable water use. The Lower Niobrara Natural Resources District Groundwater Management Plan has existed since 1986 and since then has been monitoring both the quantity and quality of water across the district. Its Integrated Management Plan was adopted in 2014, with revisions made as recently as 2019. Its purpose is "to attain and/or maintain a desired balance between water uses and water supplies of both surface water and groundwater sources so economic viability, as well as social and environmental health, safety, and welfare, can be achieved and maintained in the District for both the near-term and long-term, while also considering effects on existing surface water appropriators and groundwater users." It is our understanding that, as of 2020, the NE Department of Environment and Energy (NDEE) is working with four NRDs to devise a regional-based Integrated Management Plan for the entire Bazile Groundwater Management Area. In the meantime, formulated in 2020 and approved by the NDEE in 2023, West Knox RWS follows its own Wellhead Protection Plan, prepared by Olson Engineering. The plan was developed with technical and financial support from the NDEE, the LNNRD and the U.S. Environmental Protection Agency (EPA)

and serves West Knox RWS as “a guide to implement programs, practices, and activities that will be protective of groundwater in and around the wellhead protection area.” Activities related to the goals of the Wellhead Protection Plan already completed by West Knox RWS as of 202 are as follows:• Installation of two additional wells to double the pumping capacity of the system•Expanded boundary of wellhead protection area to encompass the two new wells • Installation of SCADA systems on all wells to simplify system operations and blend the water from all four wells to optimize water quality• Sealed a tube adjacent to Well #2 that may have been contributing to higher nitrate levels than in Well #1Planned activities by West Knox RWS for the Wellhead Protection Plan’s goals are:• Educational opportunities for the community• Continued encouragement of Best Management Practices by agricultural producers to meet nitrate reduction goals• Additional well abandonments or modifications, as needed. • System improvements such as remote water meter readers to reduce the workload on system operations staff [i.e. THIS PROJECT]

12. Addresses a statewide problem or issue;

- List the issues or problems addressed by the project and why they should be considered statewide.
- Describe how the project will address each issue and/or problem.
- Describe the total number of people and/or total number of acres that would receive benefits.
- Identify the benefit, to the state, this project would provide.

West Knox Rural Water System covers 528 square miles, serves a rural population of over 1,400, and has four primary wells. The four wells pump from the Ogallala Formation of the High Plains Aquifer. Since equipment maintained by West Knox RWS includes over 250 antiquated water meters--estimated to be from 20-39 years old--breaking down on a regular basis, staff has been very concerned about delayed detection of water leaks. They would truly like to reduce aquifer depletion—a statewide issue--by stopping water leaks as soon as possible. New remote-read water meters will help achieve that goal.

13. Contributes to the state’s ability to leverage state dollars with local or federal government partners or other partners to maximize the use of its resources;

- List other funding sources or other partners, and the amount each will contribute, in a funding matrix.
- Describe how each source of funding is made available if the project is funded.
- Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners.
- Describe how you will proceed if other funding sources do not come through.

West Knox Rural Water Systems has no potential partners for this project of purchasing and installing remote-read water meters other than this grant being applied for from

Nebraska Natural Resources Commission/Water Sustainability Fund. There is no revenue from the Lower Niobrara Natural Resources District and no tax dollars from any other source. West Knox RWS functions solely on the sale of water which will go toward their 40% portion of the project (after grant funding) along with taking out a loan from the Nebraska State Revolving Fund.

If this grant is unsuccessful, West Knox RWS will re-apply next year unless it receives advice on other funding sources to pursue.

14. Contributes to watershed health and function;

- Describe how the project will contribute to watershed health and function in detail and list all of the watersheds affected.

West Knox Rural Water System covers 528 square miles which lie in two watersheds, the Lower Niobrara to the north and the Upper Elkhorn to the south. The Verdigre Creek, with its North, Middle and South Branches, and Bazile Creek run through the district. Per its Wellhead Protection Plan, the West Knox RWS is implementing practices to protect groundwater resources. This particular project of new remote-read water meters affects two specific goals that could contribute to watershed health. First, since equipment maintained by West Knox RWS includes over 250 old water meters breaking down on a regular basis, staff has been very concerned about delayed detection of water leaks. They would like to reduce aquifer depletion by stopping water leaks as soon as possible. Secondly, a system improvement such as remote water meter readers will reduce the workload on system operations staff allowing them to spend more time on watershed health efforts.

15. Uses objectives described in the annual report and plan of work for the state water planning and review process issued by the department.

- Identify the date of the Annual Report utilized.
- List any and all objectives of the Annual Report intended to be met by the project
- Explain how the project meets each objective.

Funding this grant application from West Knox Rural Water System will help the Water Sustainability Fund meet the Natural Resources Commission's "intent to deliver long term equitable statewide distribution of funding as required under Neb. Rev. Statute 2-1507(1)". As stated in your 2020 Biennial Report to the Nebraska Legislature: "funding can't be awarded in some areas of the state until a project sponsor submits an application within that region." We can help you place a green dot in Knox County for a "Water Sustainability Fund Approved Project"! We would be happy to help you meet

your goal of “funding projects that support the sustainable use of and management for water quality, quantity, and infrastructure needs”!

16. Federal Mandate Bonus. If you believe that your project is designed to meet the requirements of a federal mandate which furthers the goals of the WSF, then:

- Describe the federal mandate.
- Provide documentary evidence of the federal mandate.
- Describe how the project meets the requirements of the federal mandate.
- Describe the relationship between the federal mandate and how the project furthers the goals of water sustainability.

On October 13, 2020 Executive Order 13956—Modernizing America’s Water Resource Management and Water Infrastructure was signed by then-President Trump. The order sets policy goals for agencies involved in water storage and supply, water quality and restoration activities, water infrastructure, water transportation and water forecasting to efficiently and effectively improve America’s water resource management, modernize water infrastructure, and prioritize the availability of clean, safe, and reliable water supplies. West Knox Rural Water System’s project fits the bill: By replacing water meters, they are modernizing water infrastructure. The early detection of leaks will improve conservation efforts and water supply sustainability. New tech capabilities of meters will contribute to improved water data management. And by reducing the workload on systems operators who have been spending much time, funds and labor on repairing antiquated equipment, we are supporting workforce efforts to retain professionals who operate and maintain America’s essential drinking water and storage facilities.